

# A study of the Kakkonda subsurface geothermal fluid -An approach from geochemistry and microbial ecology-

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We collected geothermal fluids from subsurface reservoirs located in the Kakkonda geothermal field, Iwate, Japan. Sampling was carried out on 26-29, September, 2003, from the K2-7 well (depth 1128m, temperature 190.0 degC, pressure 7.78 MPaA) , the KB-5 well (depth 1029.8m, temperature 181.5 degC, pressure 7.66 MPaA, and depth 850.3m, temperature 181.0 degC, pressure 6.09 MPaA). The sampler was sterilized prior to use. The obtained samples were subject to inorganic and organic chemical analyses, gas analysis, and microbial investigations.

Dissolved organic carbon (DOC) of the hot water was as follows; K2-7; 11.56+-0.456mg/L, KB-5 (depth 1029.8m); 3.440+-0.090mg/L, KB-5 (depth 850.3m); 8.907+-0.274mg/L. At the same time, we collected hot waters from surface hot springs and the DOC of them were analyzed in the same manner. The results are; the Tamagawa hot spring; 1.611+-0.022mg/L, the Goshogake hot spring; 6.724+-0.038mg/L. The subsurface reservoirs contain relatively high concentration of DOC, compared with the surface hot springs. However, any living microorganisms were not found in the subsurface hot waters. The sampling points are located in the Kunimitoge formation that consists of dacite tuff and shale. Those rocks may provide the geothermal fluids with the dissolved organic matter. Pyrolysis of the organic matter may concern this process. We also show the results of inorganic and gas analyses at the presentation.